DOCUMENT RESUME

ED 452 395 CE 081 668

TITLE	Teachers in the Workplace: A Staff Development Approach That Benefits Faculty and Students. Site Development Guide #8. High Schools That Work.
INSTITUTION	Southern Regional Education Board, Atlanta, GA.
PUB DATE	1998-00-00
NOTE	25p.; For site development guides #1-7 and #9-11, see ED 381 693-698, ED 404 538, CE 081 612 and CE 081 669-670.
AVAILABLE FROM	Southern Regional Education Board 592 10th St. N.W., Atlanta, GA 30318. Tel: 404-875-9211, ext. 236; e-mail: publications@sreb.org (98V07; $2). For full text: http://www.sreb.org/programs/hstw/publications/site-guides/SiteGuide8.pdf.
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Cooperative Programs; Course Content; Curriculum Development; *Education Work Relationship; *Educational Improvement; Educational Trends; High Schools; *Inservice Teacher Education; Institutional Cooperation; *Internship Programs; Professional Development; *Program Development; Program Implementation; *School Business Relationship; Teacher Developed Materials; Work Experience Programs
IDENTIFIERS	*High Schools That Work

ABSTRACT

Teachers who get an "inside look" at business and industry through internships and summer jobs are much better equipped to prepare their students for the rigors of the workplace and postsecondary education. Teacher internships followed by the revision of course content, instructional plans, and assessment strategies can change school and classroom practices in ways that lead to higher student achievement. According to the "High Schools That Work" approach, successful teacher internship programs include the following elements: (1) a site action plan and a staff development plan for involving the whole school in improving student achievement; (2) a needs assessment showing strengths and weaknesses of local school and classroom practices; (3) a curriculum that emphasizes high standards and use of authentic problems to improve school-based learning; (4) teachers' action plans for incorporating internship experiences into course syllabi and instruction; (5) meetings and work sessions before, during, and after the internship to help teachers develop and share materials and strategies; (6) ongoing communication between teachers and host companies to continue the learning process after the formal internship period ends; and (7) evaluation, feedback, and dissemination of information to ensure that the program benefits the greatest number of teachers and students. (This document includes examples of student projects that resulted from their teachers' internships and a list of the High Schools That Work goals and key practices.) (KC)

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Teachers in the Workplace: A Staff Development Approach That Benefits Faculty and Students

In today's economy, a high value is placed on the "new basics." This concept means much more than being able to read; it means being able to retrieve information, organize it, synthesize it into a plan and construct written and oral responses. It means significantly more than being able to solve arithmetic problems; it means being able to use algebra, geometry and statistics to solve problems that arise in everyday life. It means being able to apply the scientific process; to work in teams; and to understand, manage and use technology, including personal computers.

Yet many youths who graduated from high school one year ago say their high schools failed to equip them with skills needed on the job and in further learning. Graduates complain that their academic courses were disconnected from the real world, that their vocational courses failed to emphasize academic concepts and that they received little guidance in the importance of taking the "right" academic and vocational courses.

While business and industry, postsecondary institutions and young people plead for higher standards, too many schools continue to give lip service to the need for increased student achievement. School policies still sort students into many levels. Schools frequently offer tough-sounding courses with watered-down content or settle for low standards and low-level tests to measure achievement. The curriculum may be boring, repetitive, unfocused and out of step with national academic and skill standards.

What SREB Thinks Students Should Be Able to Do

The Southern Regional Education Board's *High Schools That Work* initiative is based on the belief that the curriculum should require career-bound high school students to:

- Demonstrate knowledge of mathematics, science, language arts and technical ideas and concepts;
- Relate academic and technical content to problems, topics and issues beyond the school;
- Organize, synthesize, interpret and evaluate complex information;
- Read technical materials to complete laboratory assignments or special projects;
- Consider alternative solutions, strategies or points of view;
- Defend their ideas in the face of alternative points of view;
- Become independent learners;
- Complete challenging projects;
- Make written and oral reports;
- Demonstrate proficiency to an audience of parents and/or community leaders;
- Assess their own work.

The general public and employers have one perception of high school studies, while teachers, students and parents hold a different view. For example, Public Agenda found that:

- A majority of the general public (60 percent) believe schools should place more emphasis on academic skills. Most teachers (66 percent) think schools already do so.
- A majority of the general public (52 percent) think students need to learn more mathematics, science and computer skills. Most teachers think students learn enough of these subjects.
- Almost half (47 percent) of the public and 63 percent of community leaders do not believe a high school diploma guarantees that a young person has learned the basics. Seven in 10 teachers think it does.

Opinions about what recent high school graduates are capable of doing in the workplace vary dramatically. Many more youths and parents than employers believe recent high school graduates are capable of working cooperatively and concentrating on work. Employers are much less likely to think high school graduates learned to use mathematics well and to solve complex problems.

The Need for Workplace Experiences as Staff Development

Increased expectations for high school graduates are placing added responsibility on teachers to deliver the academic, technical, intellectual and personal skills needed by youths in the workplace and postsecondary education. Yet, too few teachers have time or opportunities to visit health care facilities, manufacturing plants, government offices and other work environments to update their skills, learn what is needed in business and industry, and infuse the curriculum with examples of authentic problems that will engage youths in learning academic concepts.

The 1996 *High Schools That Work* faculty survey revealed that teachers are eager to go "behind the scenes" in business and industry. Academic and vocational teachers responding to the survey listed "visiting the workplace to see how employees use academic skills in their daily work" as one of their top five staff development priorities. These teachers realize that they can't use real-world problems to engage students if they don't know about such problems.

To respond to this need, some schools have developed ways to place teachers in business and industry programs ranging from brief job-shadowing stints to internships of as long as a year. Teachers identify the skills employers are seeking; learn how language arts, mathematics and science are used in the workplace; and observe how employees relate to each other. The experiences are designed to change teachers' expectations and standards for student learning. One teacher said, "I thought I was a good instructor, but I didn't see the whole picture until I spent time observing the high expectations in a work environment."

Teacher internships and other workplace experiences are aimed at helping teachers change their instructional practices as a result of working side-by-side with business professionals. Teachers discover the importance of making learning challenging and contemporary to keep students interested. In internships, teachers are expected to relate workplace learning to school goals, curriculum frameworks, classroom instruction and guidance practices. A science teacher who created a database of chemicals during an internship at a soft drink company began connecting science and technology in the classroom — the first time that she had done so.

The new information gained from a job-shadowing assignment or a school-year or summer internship can affect the entire school — including raising standards and re-evaluating vocational pro-

"I never realized the size and scope of a food processing plant until I spent time in one. I did it all — from working in accounting to canning and labeling. I even went to a ranch to watch how vegetable waste is recycled into cattle feed. What a rich environment I found for developing lesson plans! I got lots of ideas for integrating business environmental technologies with language arts and Spanish. This was a great experience."

Jennie Ashby
English teacher
Sussex Technical High School
Georgetown, Del.

grams and work-based learning opportunities available to students. Workplace programs for teachers can help a school meet a number of needs in raising student achievement, including:

- Making classroom instruction more active, relevant, motivating and interesting;
- Changing curriculum content and school organization;
- Getting business and industry leaders to communicate to students the importance of high performance in high school.

Although teachers can gain valuable insights through brief job-shadowing programs, this guide will deal only with teacher internship programs. An internship should include a workplace experience and activities that connect work-based and school-based learning.

The Real Purpose of a Teacher Internship Program

Workplace experiences should not be viewed as "teachers doing a job for business" or "a summer job for teachers." The real purpose of a teacher internship program is to raise students' academic, technical, intellectual and personal skills. Curriculum products and instructional and guidance strategies developed as a result of the program should:

- Support the *HSTW* recommendation of an upgraded academic core and an academic or career major;

An investment in a single teacher can have immediate and widespread impact on as many as 125 students a year. An investment in a group of teachers working together magnifies that return. Expanding the investment to include system administrators and employers spreads returns even farther — resulting in more beneficial curricula and instruction.

A New Model for Business Investment in Educational Change
BellSouth Foundation

- Address the "gap" between what students learn in high school and what they need in business and postsecondary education;
- Motivate youths to achieve at higher levels.

Teacher internship programs will help high schools achieve the *HSTW* goals if they:

- Focus on the *HSTW* key practices and principles of good staff development;
- Give one or two people overall responsibility for organization and implementation but actively involve all partners — teachers, business sponsors and school and system leaders;
- Emphasize early planning and frequent communication;
- Orient business sponsors and mentors to the *HSTW* goals and key practices and to the expectations for teacher internships;
- Provide time for teachers to plan and work together throughout the year.

Who Makes Internship Programs Happen?

Committed individuals with high expectations make internship programs work. These people make decisions about the program and what actions to take. Key players in internships include:

Leaders: These individuals have a vision of what can be accomplished in raising student performance. They come from education or the private sector: a superintendent, a principal, a curriculum specialist, a vocational director, an instructional lead teacher, a company chief executive officer, a plant manager or a chamber of commerce executive.

Partners: Partners represent schools, school districts, postsecondary institutions and business or community organizations in helping program leaders set goals. They participate in planning, implementation, evaluation and follow-through activities. While partners may have different organizational missions, they share a common vision for improving the preparation of high school youths.

Regardless of the size of the program, the following partners are needed:

Garden City High School in Kansas — a *High Schools That Work* site that enrolls more than 1,900 students — benefits from an active business-education coalition and chamber of commerce advisory council that support the district's teacher internship program. The program was inspired by teachers' needs for real-world applications to use in block scheduling and by the success of a work-based learning initiative for students. Garden City teachers may participate in a one-day job-shadowing opportunity during the school year and a four-week summer program that includes on-the-job experiences and curriculum revision. When they apply for the program, teachers list their curriculum and instructional goals and tell what they expect to learn. When accepted, they take a pre-test on Kansas education and employment statistics and participate in an orientation session on curriculum, instruction and assessment. The three-week internship is followed by a week of instructional design during which teachers create projects and activities to enhance student learning. The Garden City school district worked with a state university to design the internship program and provide graduate credit for teachers.

Roles and Responsibilities in a Teacher Internship Program

While each teacher internship program will be customized to meet school and community needs, certain roles and responsibilities will be necessary in all programs. This sample chart represents roles and responsibilities in a program developed by a school system and local businesses working together.

School System

Implements the *High Schools That Work* key practices for raising student achievement.

Analyzes student performance data and works with employers and teachers to develop program goals.

Collaborates with employers and teachers to develop a program that includes workplace experiences and a way to translate teachers' experiences into authentic and engaging curricula and instruction.

Assists with the program and related data collection, evaluation, dissemination and assessment.

Plans and implements a learning network of teachers before, during and after the workplace experience.

Supports ongoing interaction of teachers and students with business and industry.

Employer

Advocates high standards for students in high school studies.

Provides experiences that reinforce teachers' understanding of the need for students to acquire high-level knowledge and skills.

Provides job descriptions, placements and mentors to give teachers firsthand experience with workplace expectations and to acquaint teachers with hiring, performance and retention expectations.

Coaches employees on program expectations.

Advises school personnel concerning workplace expectations, industry terminology and management practices.

Provides information on the adequacy of new workers' academic and technical skills and other traits needed in the workplace.

Supports ongoing partnerships with teachers and students.

Planner or Organizer

Links the school system, teachers, employers and employees.
Coordinates and communicates.

Teacher

Works with administrators and employers to identify needs, priorities and strategies for changing curricula and instruction to raise student achievement.

Works with business and industry mentors in hands-on workplace experiences.

Translates workplace knowledge, skills and expectations into curricula and instruction.

Fosters continuing interaction with the workplace.

Workplace Mentor

Works with school administrators and teachers to develop job descriptions and placements that meet program goals.

Provides hands-on experiences and acquaints teachers with all aspects of the workplace.

Coaches teachers concerning workplace standards, procedures and equipment.

Continues professional interactions with teachers and students through mentoring, apprenticeships, classroom projects and curriculum review.

Assesses outcomes and provides feedback to other partners.

- Teachers, counselors and administrators willing to spend time in the workplace;
- Business hosts and sponsors for workplace experiences;
- Curriculum advisers to help teachers translate workplace experiences into school and classroom practices;
- Supportive school or central office administrators.

Business support to help teachers learn about the workplace already exists locally and nationally. Schools' business advisory councils and local chambers of commerce are good sources of employers who will agree to host teachers. Such employers include utilities, hospitals and health care facilities, banks, automotive dealers and light or heavy manufacturing plants. Schools also can contact local affiliates of national organizations that have pledged to help schools strengthen connections with business and industry.

As a teacher internship program becomes larger and more complex, additional partners may be needed. They may include an advisory council of business, community and education leaders or a person (perhaps from an intermediary organization) who serves as full-time planner or organizer.

Intermediary organizations: Internship programs that involve large numbers of teachers may need help from an intermediary organization to organize and conduct some parts of the program, especially the workplace experiences. Intermediary organizations may include a chamber of commerce education committee, a public education fund, a tech prep consortium or a mathematics and science alliance.

Teachers: Academic and vocational teachers from many disciplines — preferably working in teams — will participate in the internships. An English teacher, a mathematics teacher, a physics teacher and an electronics teacher may work together in a local industry to get information to better connect physical science, mathematics and electronics courses. A health teacher, a chemistry teacher, a biology teacher and a guidance counselor may use the internship to plan courses for a new health academy. Teachers should be prepared to ask questions in new settings and interact with individuals from diverse cultures and backgrounds.

Business hosts and mentors: Business hosts and mentors should demonstrate an interest in high school improvement and a commitment to the teacher internship program. They need to be skilled in their work and able to communicate clearly. Sometimes, business partners may wonder if the company's productivity, quality, time and cost-effectiveness will be adversely affected by an internship program. On the contrary, a well-run program can

Pitfalls to Avoid in Selecting a Planner or Organizer

- Business organizations sometimes undercut their own educational outreach efforts by utilizing soon-to-be-retired employees (who will not be around in the future) as partnership organizers or by emphasizing good will over real change. Successful internship programs feature active business participation that continues for several years.
- Schools and school systems sometimes undercut their own efforts by appointing planners and organizers who are involved in a number of "special projects" or lack experience in collaborating with employers. Planners must have the time, energy and ability to help teachers link their workplace experiences to higher student achievement.

contribute to the workplace through teachers' ideas and enthusiasm for learning.

Increasingly, employers are identifying a team of employees to work with teacher interns. If one host or mentor is away from the job or transfers to another location, teachers do not lose their workplace contacts.

Planner or organizer: While an internship program is based on a vision shared by leaders and partners, one or two key people guide the program on a daily and weekly basis. These individuals ask, "How can we make it happen?" They work with school leaders and teachers to customize policies and strategies that "make sense" in the community.

Planners should be good administrators, facilitators, negotiators and organizers; they should be able to coach people of diverse backgrounds in multiple work settings. If one planner or organizer comes from an intermediary or business organization, the second person should come from the school or the school district. Working as a team, with combined access to all partners, the two planners and organizers can guide the program effectively. Many business hosts will appoint someone in the company as a planner or organizer when a number of teachers are assigned to that location.

In designing an internship program, planners need to decide:

- Which employers are most likely to be able to provide internship experiences?
- Who will assist teachers in using curriculum frameworks?
- How will teachers be selected to participate in the internship?

Students Benefit from Teachers' Learning in the Workplace

By the end of the summer of 1998, more than half of the 100 faculty members at Sussex Technical High School in Georgetown, Del., will have taken part in a summer internship program. The numbers have ranged from 10 to 30 teachers per summer for the past three years. The overall objective is to support local implementation of new state standards in oral and written communication and practical mathematics applications. Participating teachers are expected to:

- Gain up-to-date information about technology, workplace expectations and academic applications;
- Apply new knowledge in evaluating academic and technical curricula;
- Develop new integrated lessons.

The internship consists of eight days on the job, followed by two days of lesson planning. Teachers meet with the assistant principal/program organizer to discuss the elements of effective integrated learning and explain how they plan to use new ideas in the classroom.

Teachers continue to meet and share ideas throughout the school year. Lesson plans will be computerized and cross-referenced so that all teachers will have access to ideas and resources generated by the internships.

Looking at the bottom line, school leaders say students are seeing the importance of what their teachers learn in the workplace and are paying closer attention to acquiring the academic and technical skills required by business and industry.

- Will teachers work in teams?
- How long will the internship last?
- How long will the curriculum transfer process take?
- Will teachers be paid or earn recertification or graduate credit?

Planners and organizers have a number of responsibilities, including:

- Communicating the internship vision to the school system and the public;
- Translating the vision into a detailed program, including materials;
- Developing clear and measurable goals, guidelines and procedures for what teachers and students should know and be able to do as a result of the program;
- Defining partners' roles and responsibilities;
- Identifying and recruiting additional partners and workplace hosts and mentors;
- Creating a process through which teachers translate workplace learning into school applications;
- Convening meetings of teachers and workplace hosts before, during and after the internship;
- Developing criteria for placing teams of teachers in the workplace;
- Communicating with teachers and business hosts throughout the internship;
- Integrating the internship program into the school's staff development plan and making sure school and system leaders budget for internship activities;
- Involving the business community and keeping business leaders informed about the program and its benefits;
- Evaluating the program;
- Planning future work-site experiences.

Getting Ready for a Successful Teacher Internship Program

A certain amount of paperwork is necessary to make sure teachers are aware of their duties and responsibilities in a workplace internship. These items include:

- **A written agreement describing the purpose and goals of the internship.** This may be:
  - A business and education compact between the local chamber of commerce (representing a number of employers) and the school system;
  - A stand-alone agreement between a business partner and the school;
  - A confirming letter between business and education partners.

The agreement should reflect the overall goals and objectives of the partnership, the mission statement, the time frame for the commitment, all partners' expectations and any financial transactions required for program operation.

- **A program description for teachers.** The description should address responsibilities and benefits of the program. Most internship programs compensate teachers, depending on the nature and length of the program and whether recertification or graduate credits are awarded. Sources of stipends include businesses, private grants, federal vocational and school improvement funds and state or system professional development funds. Internships conducted with the assistance of postsecondary institutions may result in graduate credit for curriculum development. Short-term internships may be offered as staff development, while longer-term internships may be totally or partially underwritten by employers.

Sample Teacher-Internship Planning Calendar

A calendar will help teacher internship planners stay on target with activities leading up to and following the event.

Summer before the internship

Identify business and school partners.
Agree on internship goals and objectives.
Define the target content, skills and grade levels.
Develop a plan for funding the program.
Complete a business and education compact.

Fall before the internship

Select a planner and a curriculum adviser.
Identify business and community advisers.
Make preliminary decisions concerning the program.
Identify an intermediary organization if one is needed.
Agree on program design.
Develop written agreements, procedures and materials.

Late fall/early winter

Develop workplace experience descriptions.
Begin the teacher application process.
Begin recruiting work-site mentors.

Midwinter

Select teachers for the program.
Match teachers with employers.
Begin planning the curriculum development and transfer process with teams of teachers and school leaders (one to five sessions, after school or on Saturday).
Begin detailed planning with business hosts.
Develop program materials.
Schedule daily or weekly meetings for teacher teams and frequent "one-on-one" coaching sessions for teachers during the summer; identify someone to coordinate these meetings.
Conduct an orientation meeting for potential work-site mentors.

Spring

Obtain advance materials from work sites.
Conduct an orientation meeting for teachers; introduce them to work-site mentors.

Summer

Hold an orientation and work session for teams of teachers.
Begin the work experiences and curriculum development sessions.
Provide coaching sessions for small groups of teachers.
Hold a midsummer meeting if the program lasts three weeks or longer.
Conduct a debriefing meeting at the end of the internship period.
Hold a celebration for teachers, school and system leaders, and business leaders and mentors at the end of the program; recognize employers for their efforts.
Publicize the program in the community.

After the internship

Review, assess and modify curriculum plans, units and modules.
Participating teachers should continue to meet to assess and revise curricula.
Get feedback from businesses.
Assess the program.
Disseminate program outcomes to other teachers and administrators.
Begin planning for next year.

- **A program calendar.** Keep it simple, but show the amount of time and effort the internship will require of participants.
- **An application form.** Generally, a longer and better-paid internship will require a more in-depth application. Ask about teachers' educational background, current teaching areas, skills, motivation and personal goals. Some programs require a one- or two-page résumé. A detailed application form is especially important in placing teachers in a large internship program with varied workplace experiences.
- **Employers' descriptions of workplace experiences.** Such descriptions are particularly helpful when teachers will complete projects that are handled routinely in the workplace or designed by the employer for the internship. A description can be one to three paragraphs long and should focus on the nature of the work, the opportunities to learn and the background and minimum skills needed for participation and learning. A description may not be needed if a team of teachers will rotate through several departments rather than participate in a project-oriented internship.
- **Criteria for teacher placement.** The criteria should emphasize a "match" of a teacher's background, the learning opportunities offered in the workplace and the teacher's goals for relating new knowledge to the classroom. If teachers have not been responsible for setting up the internship, teachers and mentors will want to meet once or twice to make sure all parties have common goals and can work together. The most satisfying experiences (for mentors as well as teachers) occur when the "match" is good. After teachers are assigned to jobs on paper, a workplace mentor may interview each teacher to make sure both parties can work well together.
- **A learning contract or agreement between a teacher and the school.** The contract will include sections on:

Surveying Employers Before the Internship

The Winston-Salem (N.C.) Chamber of Commerce employed a teacher to interview 23 employers in the Winston-Salem/Forsyth County area before the community launched a teacher - internship program. The employers represented career fields such as construction, manufacturing, data collection and entry, media and technology and office management. The purpose of the survey was to hear the concerns, observations and suggestions of employers about preparing youths for the workplace and lifelong learning. The interviews also provided an opportunity for employers to ask questions about the internship program. Teachers used information from the survey in writing curricula and designing projects to accelerate student learning.

Employers expressed a desire for:

- Strong written and oral communication skills;
- Application of mathematics knowledge, research and planning skills;
- Computer literacy;
- Teamwork;
- A positive work ethic.

- Projects and activities to be completed during the internship;
- Program expectations (learning objectives for teachers and their students);
- Commitment by the teacher or a team of teachers to develop a plan that can be implemented in the classroom and the school;
- Commitment by the teacher or a team of teachers to develop and implement curricula and participate in school-year components of the internship.

The agreement should include a calendar, a schedule and a time line so that all commitments are clear. If graduate or continuing education credit is to be awarded, an agreement or contract is essential. In some cases, further documentation (time sheets or sign-in sheets) will be necessary.

- **A work contract or agreement between the teacher and a business sponsor.** The agreement defines expectations for workplace participation, on-the-job behavior and products to be produced. It gives the length and nature of the internship and describes follow-up activities involving teachers and the workplace.

If teachers are to receive a stipend for the internship, the payment conditions should be spelled out in either the work agreement or the learning agreement, depending on the source of the stipend. Responsibility for workers' compensation and medical emergency procedures should be clarified in writing for all participants.

- **A teacher's work plan.** This item is needed in all internships in varying degrees. In a long-term, project-centered internship, the plan will focus on the teacher's goals during the internship. If the plan accompanies an application, it will explain why the teacher selected a particular business, what he or she expects to learn and how the experience will relate to curriculum and instruction.

Characteristics of a Successful Teacher Internship Program

The start-up steps of an internship program include communicating with business partners, conducting orientation sessions for teachers and workplace mentors, planning and scheduling activities and placing teachers in the program. Workplace experiences and their relationship to school-based learning experiences are important considerations. An internship should be:

- **Structured.** Teachers, employers and school leaders will need to work together to define what teachers should know and be able to do as a result of the internship, how they will acquire these skills and what they will take back to the classroom and the school. The program objectives should be based on what teachers, school leaders, parents and employers expect youths to know and be able to do after completing certain courses and course sequences.
- **Project-oriented, active and hands-on.** Many teachers report great satisfaction when they are made responsible for entire projects or parts of projects in an internship. This is especially true for teachers in full-day work experiences that last four to eight weeks or longer.

In shorter programs, teachers may not have enough time to complete a project. In such cases, program planners can structure the work experience by helping teachers develop a set of questions related to academic skills needed in the workplace.

- **Comprehensive.** Whether short or long, an internship should provide an overview of the entire workplace and the jobs performed there, as well as experience in one department related to a teacher's academic or vocational specialty.

- **In-depth.** Teachers should work at their projects or "jobs" a minimum of four to six hours per day for optimum benefit from the internship. Some planners believe a minimum of three to six weeks or more of eight-hour-a-day work experiences is necessary for teachers to achieve real understanding of workplace practices and skills.
- **Integrated into workplace goals.** Teachers in an internship program have a dual responsibility: to learn from the experience and to develop school and classroom applications that will give students a better understanding of the quality of work expected in a modern work setting. Full-time employees of a company need to understand why teachers are spending time in the workplace and why the teachers' work schedule may be different from that of a regular employee.

Getting the Right Products from an Internship Program

The products of an internship program vary greatly. They can be as diverse as:

- Curriculum modules, study units or plans for special long-term student projects;
- An interdisciplinary curriculum or a thematic unit planned by academic and vocational teachers working together;
- Rubrics for students' written and oral presentations;
- A new or revised course syllabus;
- A plan for involving academic and vocational teachers in a guidance and advisement system to help students and their parents select a challenging program of study with an upgraded academic core and a major;
- A plan to help teams of teachers use business and industry techniques to reach consensus on school improvement issues.

Materials to Request and Analyze During an Internship

- A company annual report.
- Information on sources of company employees.
- Employment applications showing the skills of successful and unsuccessful applicants.
- Job descriptions for a variety of positions. (Analyze for skills needed to obtain a job.)
- Performance review criteria. (Analyze for skills needed to keep a job.)
- Industry publications on topics such as management, leadership and professional development.
- Industry certification requirements.
- Industry skills standards.
- Operation and training manuals on equipment, procedures and safety.
- Technical manuals and other printed materials.

Examining Academic Skills Needed in the Workplace

Teachers who spend time in the workplace will want to ask questions and make observations to connect school-based learning with the expectations of business and industry. These questions and observations include:

- How complex are the communication skills used in the business? Do employees write reports and make oral presentations? What kinds? How often? What is the relationship between language arts skills and technical skills needed in the workplace?
- What mathematics, analytical and inquiry skills are needed? Which of the following skills are used routinely, and what types of problems are they useful in solving?
  - Estimating answers
  - Measuring in units and converting units
  - Reading and interpreting graphs, charts and tables
  - Using ratio and proportion
  - Using mathematical notations
  - Using linear and nonlinear equations
  - Using geometric or trigonometric functions
  - Using mathematics in quality assurance and process control
  - Working with statistics and probability
  - Collecting, plotting and analyzing data
  - Working with two- and three-dimensional shapes
  - Working with scale drawings
  - Measuring precision, accuracy and tolerance
  - Solving open-ended problems
  - Using computer spreadsheets
- How often does an employee check results and communicate them to others? Does someone's work depend on the accuracy of the results?
- What computer skills are used? By whom? Is it more important to learn specific software or how to learn?
- What technology skills and knowledge are used? By whom? Do the company's technology processes involve automation, robotics, electronics, pneumatics, hydraulics, manufacturing, chemical testing and/or agricultural production? What underlying scientific principles do employees need to understand and use?
- How are language arts, mathematics, science and technical skills used alone? How are they used together?
- What long-range problems are being solved? How can they be translated into student projects?
- Which employees, materials and resources will help implement revised curricula or help students complete projects?

Examining Other Skills Needed in the Workplace

- What is covered in a new-employee orientation?
- What skills do employees need to get and keep a job and move ahead in the company?
- Are employees retrained? How often?
- Is continuing education offered? How many hours do most employees complete? Who pays for it?
- Does the company cross-train?
- How does the company motivate employees? How does it reward them? What are the pros and cons of workplace incentives?
- How is "teamwork" defined and used in the workplace?
- How is group problem-solving used?
- What effect has technology had on the company in the last five years?
- What is just-in-time manufacturing? Is it used at this company?
- What management style is used?
- What does the company see as the relationship between academic skills and workplace skills? Does the employer ask to see prospective employees' high school grades and attendance records?
- What levels of accountability and responsibility are required? Do employees keep a log? What records are required daily or weekly?
- What do employees wish they had paid more attention to in high school?

Keeping a Log of Observations and Ideas

In Shelby County, Ky., teachers keep a log containing detailed observations on specific topics: choose a learning goal, identify related academic expectations, design open-response questions and develop a set of related resources. Teachers jot notes on a daily "teaching idea page" in the log. After the internship, teachers combine their workplace observations and ideas with previous training to develop study units.

Three Phases of a Teacher Internship Program

The BellSouth Foundation surveyed teachers in internship programs across the nation as part of a 1997 Educators in the Workplace funding initiative. Findings from the survey suggested that an internship program makes maximum impact when it is organized as a year-round commitment with three parts — before, during and after the workplace experience. Most teachers responding to the survey said "before" and "after" activities should take as much time as on-the-job activities. They also said the "during" phase should mix workplace experiences almost equally with activities devoted to curriculum transfer and translation. Successful programs are planned months or even a year in advance.

The amount of time spent in "before," "during" and "after" activities is a decision that each school or school district will make. A program hosted by a major employer to increase understanding of electronics and manufacturing careers will differ from a program proposed by teachers and administrators to set up a health academy.

The three phases of a teacher internship program are characterized by specific activities.

In the "before" period, partners will:

- Use school and student data, feedback from recent graduates and local labor-market statistics to set goals that will help the school raise student achievement and prepare youths for careers and postsecondary education.
- Define a process for developing curricula.
- Plan and organize activities to support program goals. Business leaders need to understand the school's academic goals and be given opportunities to share the business perspective on the value of high quality and high skills.

In the "during" period, partners will:

- Introduce teachers to the workplace and tell them what to expect in terms of employee skills and attitudes.
- Get teachers started on projects for the business sponsor or themselves.
- Require teachers to keep a journal or log of workplace experiences. Teachers describe events, ideas and reactions in their journals. Some schools and school systems provide guidelines for journal keeping, while others leave it up to the teachers. A family and consumer sciences teacher from Garden City High School in Kansas said the "wealth of information" in her log helped her develop more than 40 assessment activities that can be used in a variety of family and consumer sciences courses.
- Require teachers to assemble a portfolio of materials. The following items are typical:
  - State and system curriculum frameworks and performance standards;
  - State and system guides for curriculum development;

- School improvement goals and action plans based on *HSTW* goals and key practices;
- Journal or log entries;
- Materials, observations and interview notes collected at the work site;
- A reflective paper describing the internship in terms of personal impact, student educational impact, highlights of the experience and ways to improve the experience;
- An outline for an oral presentation on the internship and on the instructional unit to be developed as a result of the experience.

- Ask teachers to develop an action plan for translating workplace experiences into lesson plans and new or revised course syllabi. A teacher-internship action plan should identify:
  - Priorities for personal learning;
  - Priorities for changing individual teaching practices;
  - Examples of new expectations for students in the classroom;
  - Needed revisions in school and classroom organization;
  - Instructional strategies that will accomplish teachers' goals;
  - Potential student products and projects for advancing academic, technical, intellectual and personal skills;
  - Ideas for using materials gathered in the workplace and for bringing work-site mentors into the classroom;
  - Rubrics and other ways to evaluate student work;
  - Ways for students to share their work with others.
- Conduct a meeting of teachers and workplace personnel to analyze critical skills needed on the job and to relate these skills to the curriculum.

In the "after" period, partners will:

- Give teachers time to work together to translate their learning experiences into curricula and instruction, to share ideas and to evaluate the internship program.
- Promote ongoing interaction between teachers and workplace leaders or mentors in improving the quality of instruction in the classroom.
- Ask business leaders for their perspectives on proposed course standards and student projects inspired by the teacher internship program.

Teachers from Fleming County Schools in Flemingsburg, Ky., spend the school year after the internship in quarterly study groups, peer observations, professional development activities and sharing sessions to convert internship experiences into curricula and instruction.

How to Examine Skills Needed in the Workplace

- Interview at least three employees — one with a high school diploma, one with a degree from a two-year community college or vocational-technical institution and one with a four-year college diploma. Find out which courses these employees took and which ones they wish they had taken. Ask what skills are required for the job and what potential exists for advancement and higher earnings.
- Interview new as well as long-term employees from various levels within the company.
- Ask the human resources director for a list of primary reasons for rejecting job applicants.

Teachers Agree to Change Course Goals, Instruction and Assessment

In Mobile, Ala., 13 teachers from two schools with career academies — one in construction trades and one in health care — spent three summer weeks in the workplace and a fourth week planning new curricula in collaboration with a group of business representatives and school administrators. During the internship, teachers rotated through all aspects of industry, including planning, finance, management, production, technology, community concerns, safety and environmental issues.

Teachers agreed to make courses more challenging, to incorporate new information into instruction, to use applications from business and industry to make labs and lessons more meaningful and to revise assessment to reflect new levels of understanding. They also committed to assign long-term projects based on real-life events, to introduce new classroom technologies and to draw on workplace contacts and experiences in beefing up instruction.

Translating Workplace Experiences into Revised Course Syllabi

Teachers are invigorated by workplace experiences: completing projects, collecting materials, making observations and conducting interviews. As they begin to translate the experiences into course syllabi, they need clear directions that will make sure their output is aligned with school, system and *HSTW* guidelines and practices. In creating the products, teachers will draw from their individual action plans, journal entries and portfolio materials assembled during the internship.

Teachers need clear directions for using what they learn from the workplace. The resulting course syllabi, instructional plans and revised assessment procedures can be based on the SREB publication *Designing Challenging Vocational Courses: A Guide to Preparing a Syllabus*. In creating new course goals, an instructional plan, innovative projects and revised assessment standards and methods, teachers will draw from their individual action plans, journal entries and portfolio materials assembled during the internship. Teachers in Memphis, Tenn., received laptop computers and training in using a curriculum development software package to create new course syllabi and instructional plans based on internship experiences.

Other Long-Term Benefits of Teacher Internships

The contacts that teachers make during internships can pay off in the future. Follow-up activities can include:

- A field trip for an entire class;
- Job-shadowing, apprenticeship and internship experiences for students;
- Job-shadowing and brief internship experiences for other teachers;
- Business and industry support to help students complete challenging projects;
- Classroom visits and input on specific topics by business and industry volunteers;
- Staff development seminars conducted by representatives of business and industry.

As interaction with the business community increases, schools are devising ways to keep up with contacts and placements and to connect them to the school improvement plan. The organizers of a five-county teacher internship program in Kentucky created a database to match willing employers with the needs of teachers and students.

Evaluation of the Teacher Internship Program

Program planners will want to seek the input of teachers and employers in assessing whether the program was a success and in deciding what to modify in the coming year.

A survey of participating teachers will contain items such as:

- The overall impact of the program on the teacher and the classroom;
- The most (least) effective component of the program;
- How the program changed the teacher's attitude toward high standards for all students;

Teacher Joins the Electronic Revolution After Seeing Computers Everywhere in Her Summer Internship

After "seeing computers everywhere" in her summer internship, one teacher made the leap from computer novice to technology coordinator. In her new position, she has taught thousands of students the best ways to use computer software and the Internet to further their studies.

Carla Brown, a former mathematics teacher and now instructional technology coordinator for secondary schools in the Coweta County School System in Georgia, served an internship with the Georgia Power Co. in 1992. She spent the summer loading software and upgrading computer networks — a new experience despite 10 years of teaching mathematics courses, including eighth-grade mathematics, pre-calculus and basic computer programming. The internship taught her that every employee had to be competent with a computer.

Upon returning to the classroom, she translated the electronic aspects of the workplace into real-world mathematics problems. Brown "threw away the book" and developed problems based on true-to-life situations. She made many more five- to 10-day assignments and asked students to keep logs of problems, barriers and solutions. She also required much more reflective writing. Students noticed the change in instructional techniques: "She stopped answering questions and made us answer them instead," one student said.

The next year, during an internship at Georgia Power's Shenandoah Environmental Education Center, she learned to use the Internet. As a result, she was able to share information with many teachers and students and involve them in collaborative activities. Since then, she has trained more than 1,400 teachers and 4,000 students to use the Internet and better utilize various types of software.

"Today, everyone needs access to the best information in the shortest time to solve problems and communicate with others," Brown said. "A teacher internship opened my eyes to this need."

- Ways the teacher will modify curricula and instruction to raise student achievement;
- New ways the teacher will relate to other academic and vocational teachers in planning challenging learning experiences;
- Materials that proved especially helpful in the internship;
- The most challenging (most useful) (most disappointing) aspect of the workplace experience;
- Advice to other teachers who want to participate in internships;
- An example of a unit, lesson plan or course syllabus developed as a result of the workplace experience.

Employers can give their impressions of:

- The value of the internship to the company;
- The time frame of the internship — too short, too long, right/wrong time of year;
- Their willingness to offer other internships in the future;
- Other ways to share workplace information with teachers.

Dissemination of Knowledge Gained and Products Developed

The experiences of a few teachers can be shared successfully with colleagues throughout the school and district in a number of ways:

- Participating teachers can make presentations at school assemblies and staff development workshops.
- Lesson plans and projects can be distributed through hard copies, computer disks and the Internet.
- Networks of teachers can be organized to continue curriculum revision and idea-sharing throughout the school year.

Conclusion

Teachers who get an "inside look" at business and industry are much better equipped to prepare their students for the rigors of the workplace and postsecondary education. Teacher internships followed by the revision of course syllabi, instructional plans and assessment strategies can change school and classroom practices in ways that lead to higher student achievement.

A successful teacher internship program is based on certain elements that exist or can be developed at the school site. They include:

- A site action plan and a staff development plan for involving the whole school in improving student achievement;
- A needs assessment showing strengths and weaknesses of local school and classroom practices;
- A curriculum that emphasizes high standards and use of authentic problems to improve school-based learning;
- Teachers' action plans for incorporating internship experiences into course syllabi and instruction;
- Meetings and work sessions before, during and after the internship to help teachers develop and share materials and strategies;
- Ongoing communication between teachers and host companies to continue the learning process after the formal internship period ends;
- Evaluation, feedback and dissemination of information to ensure that the program benefits the greatest number of teachers and students.

Teachers' Workplace Learning Experiences Translate into Challenging Student Projects

Types of Teachers	Where They Interned	What They Did	What Students Did
Criminal justice	Attorney general's office	Shadowed private security personnel	Developed a proposal — including policies, procedures and a budget — for a private security company to guard a resort area
Science: Chemistry in grades 10 through 12 and biology in grade nine	Crime laboratory	Learned scientific crime-detection procedures	Used new testing procedures and new standards for collecting and presenting evidence
Environmental technologies — forestry, aquatics, soils, horticulture, entomology, aquaculture and wildlife	State Department of Natural Resources and Environmental Control	Studied beekeeping and tree-planting, septic tank installation, soil analysis and water inspection	Set up beehives on the school grounds; learned to treat insect infestations in bees
Media specialist	An online technical support division of an Internet service provider	Learned all phases of operation; revised the ninth-grade information-literacy curriculum	Used up-to-date information to complete Internet-related research projects
Ninth-grade civics and government; 11th-grade American history	Small business	Government involvement in all aspects of small business — including payroll, weights and measures, and safety	Nine-week project: Created a small business to demonstrate government regulations — zoning ordinances, building codes and waste treatment requirements; devised strategies for dealing with the impact
Health professions — athletic health care	County Emergency Medical Service (paramedics)	Learned modern emergency medical procedures; worked with criminal justice and science teachers to plan an integrated project	Responded to a "mock accident" — a daylong project: Health students treated injuries and performed triage; criminal justice students conducted an investigation and interviewed victims and witnesses; science students examined skid marks and calculated speed and position of vehicles and investigated a "suspicious white substance"

Types of Teachers	Where They Interned	What They Did	What Students Did
English	Worked in all departments of a hospital	Collaborated with a biology teacher and a health occupations teacher to write integrated lesson plans based on experiences in each hospital department	In the respiratory department lesson, created a three-dimensional model of the respiratory system, conducted a survey on smoking and reported the results, examined the tobacco industry controversy, measured pulse rates during physical activity, described respiratory therapy treatment and listed reactants and products of cellular respiration
Chemistry and physics	Coal-fired power plant	Worked throughout the plant, including water purification and fuel delivery	Visited the plant to get the answers to assigned science questions; prepared written and oral reports for presentation to the class
Family and consumer sciences	Early childhood education center	Participated in all functions, including instruction and daily operation of the center	Identified the qualities of successful child-care providers and compared them with their own skills; examined the teamwork aspect of child care; wrote a newsletter for parents
Accounting and marketing	Automobile dealer	Worked in all departments, including accounting, loans, check processing, marketing and sales	Participated in an interdisciplinary project on "Buying a Car": Learned the importance of contracts and legal responsibilities and figured the "true cost" of a car (loan interest, taxes and operating expenses); created graphs showing budget and loan information and summarized project activities in a written report
Algebra and geometry	Truck rental company	Participated in all aspects of renting out trucks to transport loads for long and short distances	Planned a move from one city to another, including the distance to be traveled and the size of the load; figured the cost of renting a truck in terms of rental fees, operating costs, etc.

This chart is based on experiences of teachers in internship programs at *High Schools That Work* sites and other high schools.

High Schools That Work Goals and Key Practices

Goals

- To increase the mathematics, science, communication, problem-solving and technical achievement and the application of learning for career-bound students to the national average of all students.
- To blend the essential content of traditional college preparatory studies — mathematics, science and language arts — with quality vocational and technical studies by creating conditions that support school leaders, teachers and counselors in carrying out the key practices.

Key Practices

- Setting higher expectations and getting career-bound students to meet them.
- Increasing access to challenging vocational and technical studies, with a major emphasis on using high-level mathematics, science, language arts and problem-solving skills in the context of modern workplace practices and in preparation for continued learning.
- Increasing access to academic studies that teach the essential concepts from the college preparatory curriculum through functional and applied strategies that enable students to see the relationship between course content and future roles they envision for themselves.
- Having students complete a challenging program of study with an upgraded academic core and a major. An upgraded academic core includes at least four years of college preparatory English and three years each of mathematics and science, with at least two years in each area equivalent in content to courses offered in the college preparatory program. The major includes at least four Carnegie units in a career or academic major and two Carnegie units in related technical core courses.
- Providing students access to a structured system of work-based and high-status school-based learning — high school and postsecondary — collaboratively planned by educators, employers and workers and resulting in an industry-recognized credential and employment in a career pathway.
- Having an organizational structure and schedule enabling academic and vocational teachers to have the time to plan and provide integrated instruction aimed at teaching high-status academic and technical content.
- Having each student actively engaged in the learning process.
- Involving each student and his/her parent(s) in a career guidance and individualized advising system aimed at ensuring the completion of an accelerated program of study with a career or academic major.
- Providing a structured system of extra help to enable career-bound students to successfully complete an accelerated program of study that includes high-level academic content and a major.
- Using student assessment and program evaluation data to continuously improve curriculum, instruction, school climate, organization and management to advance student learning.

High Schools That Work is supported in part by a grant from the DeWitt Wallace-Reader's Digest Fund.